UCSF
Newsbreak

News for the UCSF Campus Community

VOL. 13, NO. 7 MARCH 27, 1998

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UC Regents approve BALSA/UCSF collaboration

By BILL GORDON

San Francisco business leaders will join with UCSF in a unique collaboration to support development of a new research campus at Mission Bay under a plan approved March 20 by the UC Board of Regents.

The Bay Area Life Sciences Alliance (BALSA) and UCSF plan to form a new limited liability company (LLC) to provide additional expertise and resources to facilitate development of the Mission Bay site. Under the proposal, all strategic planning and financing decisions will remain within the control of the University.

BALSA, a non-profit public benefit corporation established by local business leaders to promote biotechnology and life sciences development in the Bay Area, made significant contributions to UCSF's success in securing the Mission Bay site and planning the development.

"We are extremely grateful for the assistance BALSA already has provided to UCSF — and to the citizens of the Bay Area and California. This formal cooperative venture promises to help speed the development of critically needed laboratories and teaching facilities and to create new opportunities for medical discovery at UCSF," said Bruce W. Spaulding, UCSF vice chancellor for advancement and planning.

BALSA's previous contributions included assisting in negotiations to obtain the donation of land for the campus, providing substantial legal and engineering support, conducting an international design competition to select a master planner for the site, and guaranteeing the cost of preliminary design work to accelerate the development of the first buildings.

Under the plan approved March 20 by the Regents, UCSF and BALSA will formalize their collaboration with the creation of UCSF Mission Bay Campus LLC.

"The company shall be organized exclusively for nonprofit purposes; specifi-

(See **Regents** on page 3)



Tom Wachs

Hoop dream!

Elan Masliyah, a regular on the Millberry basketball courts, made the shot of his life. Masliyah, a member of Millberry Programs & Services and coordinator for EMPACT, was at a Golden State Warriors game Feb. 22, when he was picked from the crowd of 13,000 to attempt a half-court shot. The prize: a 1998 Chevrolet Malibu. In the third quarter of the game, the nervous but able Larry Bird admirer did his best imitation of the basketball great, and tossed in a 47-footer. Last Friday, Masliyah picked up the keys to the brown Malibu, valued at $18,000, at Ellis Brooks Chevrolet in San Francisco.

New pediatric trauma room opens at SFGH

By CORINNA KAARLELA

Children with serious illnesses or injuries now will receive special treatment at San Francisco General Hospital, which has opened a unique pediatric trauma room designed specifically with young patients and families in mind.

The child- and family-friendly room, carved out of a portion of the hospital's emergency department, will ease the treatment process for youngsters with urgent medical needs, said Ron Dieckmann, UCSF chief of pediatric emergency medicine at SFGH and UCSF professor of pediatrics and medicine.

"Having a designated space for kids will allow us to do everything more easily," Dieckmann said. "It will allow us to provide care in a more humane way. And it will allow us to do it in a more timely, effective manner, because all the equipment will be in one place."

The new room is funded by the SFGH Foundation, a non-profit organization dedicated to improving patient care at the hospital. It is named the Rhoda Goldman Room for Infants and Children in memory of the San Francisco philanthropist who died in 1996. A $75,000 grant from the Richard and Rhoda Goldman Fund sup-

(See **Trauma** on page 8)

UCSF ultrasound procedure detects Down's syndrome

By ABBY SINNOTT

A new ultrasound procedure available at UCSF allows doctors to detect fetal chromosomal abnormalities, such as Down's syndrome, earlier in pregnancy and with a higher sensitivity than other screening methods, said a UCSF geneticist who is the only clinician in Northern California trained to perform this procedure.

The novel technique measures the fluid accumulation, or nuchal translucency, in the neck of fetuses that causes abnormal swelling or enlargement—an indicator of a chromosomal defect.

"The advantage of fetal nuchal translucency screening is two-fold: it spots problems early in pregnancy during a woman's first trimester at 10-14 weeks, and detects 80 percent of Down's syndrome cases," said James Goldberg, director of the reproductive genetics unit in the UCSF department of obstetrics, gynecology and reproductive sciences. He adds that Down's syndrome affects one in 700 fetuses annually in the US.

Because of its timeliness and high detection rate, fetal nuchal translucency is a more effective screening method than a serum, or blood test — the most commonly used detector for fetal abnormalities. A blood test is performed during a woman's second trimester at 15-20 weeks, and identifies only 60 percent of Down's syndrome cases.

Testing for chromosomal abnormalities in the first rather than second trimester has the advantage of earlier prenatal diagnosis and consequently a less traumatic termination of pregnancy if a couple chooses this option, Goldberg said.

A potential criticism of early compared to late prenatal diagnosis is that, in some cases, a woman may experience spontaneous miscarriage, removing the need, if she chooses, for an elective abortion, Goldberg notes. However, he explains that this is also true for mid-trimester screening and that each pregnancy differs, making it impossible to determine which pregnancies will miscarry.

In addition to detecting chromosomal abnormalities in single and multiple pregnancies, fetal nuchal translucency screening is also a potential marker for a wide variety of fetal problems and genetic syndromes.

"It appears that an increased nuchal translucency thickness, even if the chromosomes are normal, is associated with an increased risk of other types of birth defects, most commonly heart defects," Goldberg said. "We believe that problems with lymphatic or cardiac development are what causes abnormal swelling in the neck of fetuses."

In fact, data from as early as 1866, documented by Langdon Down, reported that the skin of affected individuals appears to be too large for their bodies. A normal nuchal translucency thickness ranges from one to two millimeters and varies with the gestational age of a fetus.

UCSF Medical Center, part of UCSF Stanford Health Care, will offer fetal nuchal translucency screening and counseling to all pregnant women during their first trimester of pregnancy. Positive results will be confirmed by an invasive test, either an amniocentesis or chorionic villus sampling, in which a small amount of a woman's placenta is tested. These

(See **Ultrasound** on page 6)

Zach Hall appointed UCSF vice chancellor for research

By BILL GORDON

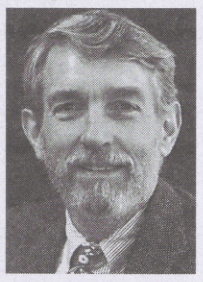
Zach W. Hall, a national leader in medical research and a renowned neuroscientist, has been appointed to the new position of UCSF vice chancellor for research.

Hall will oversee UCSF's $350 million annual research enterprise and provide leadership as the campus embarks on major medical research initiatives at the new UCSF Mission Bay site and existing campus locations. Hall will coordinate research programs at all UCSF sites, including the main Parnassus Heights campus, the UCSF/Mount Zion Medical Center, San Francisco General Hospital, and the San Francisco VA Medical Center.

"Zach Hall brings the experience and knowledge necessary to help plan and secure UCSF's future — great accomplishment as a scientist, extensive knowledge of UCSF's unique strengths and complexity, the unquestioned respect of the faculty and staff, and national leadership in setting medical research priorities," said UCSF Chancellor Haile T. Debas.

Hall's appointment was made by Debas with the concurrence of Chancellor Designate J. Michael Bishop. The UC Board of Regents acted March 20 to finalize the appointment.

Hall originally came to UCSF in 1976 as professor of physiology and head of the division of neurobiology in the department of physiology. He later served as chair of the department of physiology and head of the biomedical sciences graduate program.



Hall

In 1994, he went on leave from UCSF to become director of the National Institute of Neurological Disorders and Stroke (NINDS) of the National Institutes of Health.

In January, Hall returned as associate dean for research in the UCSF School of Medicine. In that position, Hall has overseen the school's organized research units and general clinical research centers and guided academic planning for the campus expansion at Mission Bay.

As vice chancellor for research, Hall will play a key role in the development of UCSF's major new research campus in San Francisco's Mission Bay. In keeping with UCSF's Long Range Development Plan, the campus plans to ease a severe space shortage at existing sites by developing 2.65 million square feet of new space on a 43-acre site at Mission Bay over the next 15 to 20 years.

The additional space, devoted primarily to research laboratories, will allow UCSF scientists to rethink and reorganize the way research is conducted at both the new site and at existing campus sites.

At the NINDS, Hall presided over a major reorganization of internal and external research programs. The leading federal agency for research on disorders of the brain and nervous system, NINDS includes a staff of more than 700 scientists and administrators and operates with an annual budget of $780 million.

As chair of the UCSF department of physiology, Hall was instrumental in starting inter-departmental graduate programs in neuroscience and biomedical science that served as models for similar programs at other institutions. During his tenure as chair, the department of physiology was and continues to be one of the country's preeminent programs.

Dean of top-ranked UCSF School of Pharmacy accepts University of Michigan post

George Kenyon, dean of the top-ranked UCSF School of Pharmacy since January 1993, will depart at the end of August to take a new post as dean of the University of Michigan School of Pharmacy. On March 20, the Regents of the University of Michigan approved the appointment, effective September 1, 1998.

As dean of the UCSF School of Pharmacy, Kenyon has been responsible for planning, budget, personnel, and program development and implementation. Kenyon has overseen the establishment of the department of clinical pharmacy; the development of the Molecular Design Institute, which has earned UC-systemwide designation as an organized research unit; and the creation of the T.J. Long Professorship of Clinical Pharmacy, the School's first endowed chair.


Kenyon

Under his leadership the curriculum for pharmacy students has been revamped. This fall for the first time pharmacy students will be offered curriculum options in pharmaceutical health policy and pharmaceutical sciences.

Kenyon has stressed the importance of using computers and databases in education, research and pharmacy practices —revitalizing the graduate program in medical information sciences and initiating the construction of both the Computer Resource Center and the Basic Science Instructional Center.

Surveys have long ranked the UCSF School of Pharmacy as the top pharmacy school in the country. The School has pioneered the training of pharmacy students in clinical settings, and it was one of the first pharmacy schools in the nation to offer the doctor of pharmacy (PharmD) degree. The UCSF School of Pharmacy has repeatedly earned more financial support than any other pharmacy school from the National Institutes of Health to conduct original research studies.

Kenyon assumed leadership of the UCSF School of Pharmacy at a time of state funding cuts for the University of California, but despite budget challenges the School nonetheless retained its core faculty and its top ranking. Recently, Kenyon has been instrumental in drafting plans to move several research programs in the School of Pharmacy to the Mission Bay Campus of UCSF, a change that will alleviate overcrowding of the School's research space on the main Parnassus Avenue location. In addition, Kenyon has explored opportunities for coordinating clinical and educational programs in pharmacy made possible by the recent merger of the UCSF and Stanford medical centers.

"Dean Kenyon has been a strong guiding light in keeping the UCSF School of Pharmacy at the forefront in shaping research and educational priorities to meet changing needs," according to Chancellor Haile T. Debas. "Under his leadership the research programs in the School of Pharmacy remain a key catalyst in generating new approaches to drug design and in advancing the practice of molecular medicine."

Before becoming dean, Kenyon served for 10 years as chair of the department of pharmaceutical chemistry, where he was instrumental in initiating an ongoing multimillion-dollar, NIH-supported research project to design new AIDS drugs. Kenyon's own wide-ranging research, which he will continue to pursue as Tom D. Rowe Collegiate Professor of Pharmaceutical Chemistry at the University of Michigan, is aimed at understanding mechanisms of enzymatic actions, and at designing new strategies to block the actions of enzymes in ways that may lead to new drugs.

—Jeffrey Norris

Luft wins esteemed research prize

Harold S. Luft, director of the Institute for Health Policy Studies at UCSF, received the 1998 Health Services Research Prize. The international award recognizes significant contributions to improving public health through innovative health services research. The Health Services Research Prize is the highest distinction that researchers and innovators can achieve in the field of health services.

An educator and author whose research on health maintenance organizations has become the standard reference tool, Luft will receive the $25,000 prize, supported by The Baxter Allegiance Foundation and administered by the Association of University Programs in Health Administration (AUPHA) at the association's Annual Meeting on June 20 in Washington, DC.

In 1995 Luft was named the Caldwell B. Esselstyn Professor of Health Policy and Health Economics. Other awards he has received include election to the Institute of Medicine of the National Academy of Sciences; research associate for the National Bureau of Economic Research; and Flinn Distinguished Scholar in Healthcare Management and Policy at the University of Arizona and Arizona State University. He was also a Fellow for the Center for Advanced Study in Behavioral Sciences and a National Science Foundation, Carnegie Foundation and Graduate Prize Fellow at Harvard University.


Luft

During his career, he has written or co-written 18 books and monographs and more than 90 articles in refereed journals. Luft's late-1970s paper on how HMOs achieved cost savings was a catalyst for 20 years of study comparing HMO performance to fee-for-service medicine. In the late 1970s and early 1980s, Luft and his colleagues investigated the relationship between patient outcomes and volume of procedures performed. This research not only demonstrated that collaborations between economists and clinicians are possible and necessary but also sparked continued research into the issue.

Appointments

Mary Anne Koda-Kimble, professor and chair of clinical pharmacy, School of Pharmacy: Appointed to the American Council on Pharmaceutical Education (ACPE) board of directors, effective July. Koda-Kimble received her doctor of pharmacy degree from UCSF and has provided leadership to the faculty and administration of her alma mater for more than two decades. A nationally recognized leader in both pharmaceutical education and pharmacy practice, Koda-Kimble was a member of the American Association of Colleges of Pharmacy's (AACP) Commission to Implement Change in Pharmaceutical Education from 1989 to 1993 and served as president of the association in 1995-96.

ACPE is the nationally recognized accrediting body for the professional degree programs of the nation's 80 colleges and schools of pharmacy. The council is an autonomous agency whose board of directors is derived through appointments by AACP, the American Pharmaceutical Association and the National Association of Boards of Pharmacy.

Helen Loeser, professor of pediatrics: Appointed associate dean for curricular affairs in the School of Medicine. Loeser will be responsible for leadership, management and evaluation of the undergraduate medical school curriculum. This includes articulating a vision of the curriculum, promoting innovations and educational research, and managing the office of curricular affairs.

Maxine Papadakis, professor of medicine: Appointed associate dean for student affairs, effective July 1. Papadakis will be responsible for promoting a caring and collaborative learning community, advocating for students and providing a personal and career counseling. She will manage the office of student affairs and provide leadership and scholarship in student programs.

Theodore Phillips, professor and chair, radiation oncology: Appointed to the newly endowed chair, the Won-Kun Fu Professorship of Radiation Oncology.

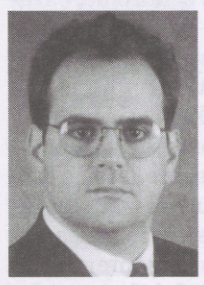
Theodore Schrock, professor and interim chair, department of surgery: Appointed chair of the department of surgery and as the J. Englebert Dunphy Endowed Chair. Schrock has been a stellar faculty member of the department of surgery since 1971 and interim chair of the department for the last four and a half years.

Honors & Awards

Mitchell Feldman, assistant clinical professor, School of Medicine: Received the SGIM National Award for Innovation in Education — a unanimous choice of the national committee. SGIM is the Society of General Internal Medicine — the main professional organization for most general internists.

Leonard Hayflick, adjunct professor of anatomy: Elected a corresponding member of the Société de Biologie de France. Founded in 1864, this is one of the oldest biology societies in the world.

Geoffrey Manley, resident in neurosurgery and coinvestigator with the UCSF Injury Center: Awarded first place in the 1998 National Residents' Trauma Paper Competition sponsored by the American College of Surgeons, Committee on Trauma for his research entitled "Brain Tissue Oxygenation during Hemorrhagic Shock, Resuscitation and Alterations in Ventilation." Manley's studies were aimed at improving upon current methods for assessment of brain oxygenation by testing a recently developed microelectrode for use in direct and continuous measurement of brain tissue oxygen levels. The studies in this experimental model were recognized as a significant contribution to the understanding of how optimal brain oxygenation can be achieved during the management of traumatic shock and brain injuries.


Manley

Publications

David Senechek, assistant clinical professor, recently published a book entitled *Placing AIDS and HIV in Remission: A Guide to Aggressive Medical Therapy for People with HIV Infection.* The book was given a favorable review in The San Francisco Chronicle, March 6, 1998, edition.

Excellent educators receive awards

Chancellor Haile T. Debas recognized three UCSF faculty members at the May 9 Founders Day banquet with the annual Distinction in Teaching Award. Faculty are nominated by students and/or colleagues from the four professional schools and the Graduate Division and are selected by a subcommittee of the Committee on Academic Personnel.

Christopher Cullander, an assistant professor in the department of biopharmaceutical sciences and pharmaceutical chemistry, was selected for his high level of energy, commitment and dedication to his teaching activities. He joined the UCSF faculty in 1994. His two courses have received uniform praise from students and other faculty for their focus on conceptual learning rather than memorization. His efforts have been extended into the development of Internet links to other university campuses for courses similar to his so that students can have access to alternative presentations which would enhance their understanding of basic science material.

Kathleen Puntillo began teaching at UCSF in 1993, when she served as assistant professor/director of the critical care and trauma graduate program in the department of physiological nursing. She has demonstrated continued commitment to graduate nursing education and in 1997 was appointed associate professor/director of the program. As a member of the UCSF School of Nursing's faculty, she also established the first Acute Care Nurse Practitioner Program in Northern California, while simultaneously developing a Post-Master's Acute Care Nurse Practitioner Program. Her commitment to teaching is evident in more than 100 hours of instruction each year, and outstanding student evaluations.

Joachim Li is an assistant professor in the department of microbiology and immunology, School of Medicine. Li joined the faculty in 1993, and is a dedicated teacher who has received consistently "extraordinary" evaluations from his students. Li's investment of time to develop effective approaches to transmit a large body of complex information to classes which enroll both beginning and advanced students is recognized as unique.

Private Support

UCSF is pleased to acknowledge the following gifts/pledges of $25,000 or more from individuals, corporations and foundations received March 1-14, 1998.

$500,000 or more
Mr. and Mrs. David Morse

$250,000 - $499,999
Cap CURE

$100,000 - $249,999
Bristol-Myers Squibb

$25,000 - $99,999
Biophausia AB
California HealthCare Foundation
The John E. Fetzer Foundation
KeraVision
Merck & Company Inc.
Nguyen T. Nguyen, '55
Pediatric AIDS Foundation
Dr. and Mrs. Patrick M. Ryan, '63

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Blackburn finds promise of cancer cure at the cellular level

By SARAH ELLIOTT

Without entering into a theological quagmire, one could comfortably assert that the human body is a miraculous creation. When everything is working properly, we keep our hearts beating, fill our lungs with air, regulate our temperature, stave off infection, and develop from seed into adulthood with unique characteristics — all without consciously deciding to do so.

So it is easy to just sit back and marvel at the human body, let it do its thing. But like the early explorers who believed there was something more to the earth than the patch of soil they were standing on, molecular biologists do not accept that we are born, we live and then we die. Their research seeks to understand why we live and why we die and why things *don't* always work properly along the way.

During the 20th century, researchers have discovered that the human cell plays a key role in the aging process and at the crux of the question of mortality, as far as the human cell is concerned, lies the telomere. Often equated with the plastic tip placed on a shoelace to keep it from raveling, telomeres are DNA that protect the ends of chromosomes and keep a running count of how many divisions are left in a cell's life; telomeres shrink with each cell division, until they become so short that they tell the cell to die. It was UCSF professor Leonard Hayflick who, in 1961, discovered that human cells in a culture divide a finite amount of times before reaching a maximum limit, henceforth called the Hayflick limit.

About 25 years later, another UC professor made a groundbreaking discovery. While a faculty member at UC Berkeley in 1985, Elizabeth Blackburn discovered telomerase, an enzyme built of RNA and protein that builds and stabilizes telomeres.

In the January 16 issue of Science, researchers from Geron Corp. of Menlo Park and the University of Texas Southwestern announced their success at extending the life of human cells in the test tube beyond the Hayflick limit. They did this by introducing telomerase.

"Good experiments are the ones that stimulate more experiments. The work that was recently published by Geron and UT was a good experiment — in some ways it raised more questions than it answered," said Blackburn, now chair of UCSF's department of microbiology and immunology "But it did sharpen the focus of something we have been really intrigued by — what it is that caps the very tip of the telomere. The experiment makes clearer that this is something we need to understand."

According to Blackburn, the experiment also confirmed that having an active telomerase present is one of the things that allows cells to keep on dividing. In order for cells to replicate, they must have good caps at the ends of their chromosomes. Human cells are equipped with alarm bells that 'sound' when they sense broken DNA. If a good telomerase enzyme is not present, the chromosome thinks that the end of the DNA, which is normally capped, is a broken end, Blackburn said.

"This is very bad, because if a chromosome breaks, the next time that cell divides it will make all sorts of mistakes and send the wrong genes to the wrong cells." One of the roles that telomerase plays is suppressing that signal.

Blackburn and other scientists have found that telomerase research has important implications for cancer treatments. Because cancer cells have the ability to turn on telomerase, they can replicate without end. Blackburn said that the next question to ask is "How can we kill cancer cells?"

"You can do something mean to the cells," Blackburn said, referring to the idea of "messing up" or taking away their telomerase so they will no longer have a functional cap. "If the ends don't have the proper cap they get very sticky, and they will stick to each other. That gums up cells so they can't divide, or if they try to, they will basically commit suicide."

Blackburn is excited about recent results that have come out of her lab at UCSF, but was unable to discuss specifics because they haven't been published.

"Things have started to come together. Even 6 to 8 months ago I would have thought about things very differently," Blackburn said. "With these recent experiments, the idea of capping is starting to be very crucial in our minds."

Aside from being department chair, Blackburn is also president of the American Society of Cell Biology for 1998. A frequent lecturer, Blackburn had to cut back on out-of-town engagements for fear of stretching herself too thin.

"When I became chair, I had to accept fewer invitations. That was good, because then people in the lab started noticing that I was around," Blackburn laughed. "I feel that there is never enough time in some sense, but I have very good students and postdocs, and I am right in the lab so I feel very in touch with what is going on."

She also takes her role as mentor very seriously. As an undergrad at the University of Melbourne (she grew up in Tasmania), during her graduate work at Cambridge and her postdoc work at Yale, Blackburn felt "fortunate" to have found supportive environments.

"People want to feel supported in what they are doing, who they are and why they are doing it. It is especially important these days in the world of science — in biology anyway — where things are getting tighter, jobs are not to be had for the asking," Blackburn said.

Blackburn feels that particular attention should be paid to encouraging women in science.

"Roughly about 50 percent of students will be women, then the fraction of postdoctoral fellows falls, and then there is already a drop at the assistant professor level. I am the only woman chair in the School of Medicine," Blackburn pointed out. "One has to look at that and see that there is something quite serious happening."

Blackburn lives in San Francisco with her husband, Jon Sadat, and their son, Ben — two of the main factors in her decision to move from UC Berkeley to UCSF in 1990. "I didn't want to spend that time commuting," Blackburn explained. "I've got too much going on, and life is too precious to spend on the road."

She also felt a strong pull to join UCSF's research community. "I have always loved UCSF and I thought it would be fun and challenging."



Chris T. Anderson

Blackburn lectured on "How Do Telomeres Really End?" at the Gladstone Institute of Virology & Immunology.

Regents (from page 1)

cally to support, benefit and further the charitable, scientific, and education programs of UCSF," according to the plan presented to the Regents. Campus leaders expect the new company to ensure efficient, cost-effective planning and development of the new site.

UCSF plans to develop a major new center for medical research at Mission Bay. The long range plan for the campus calls for the construction of 2.65 million square feet of new space over the next 15 to 20 years at a 43-acre site in Mission Bay, about a mile south of San Francisco's financial district.

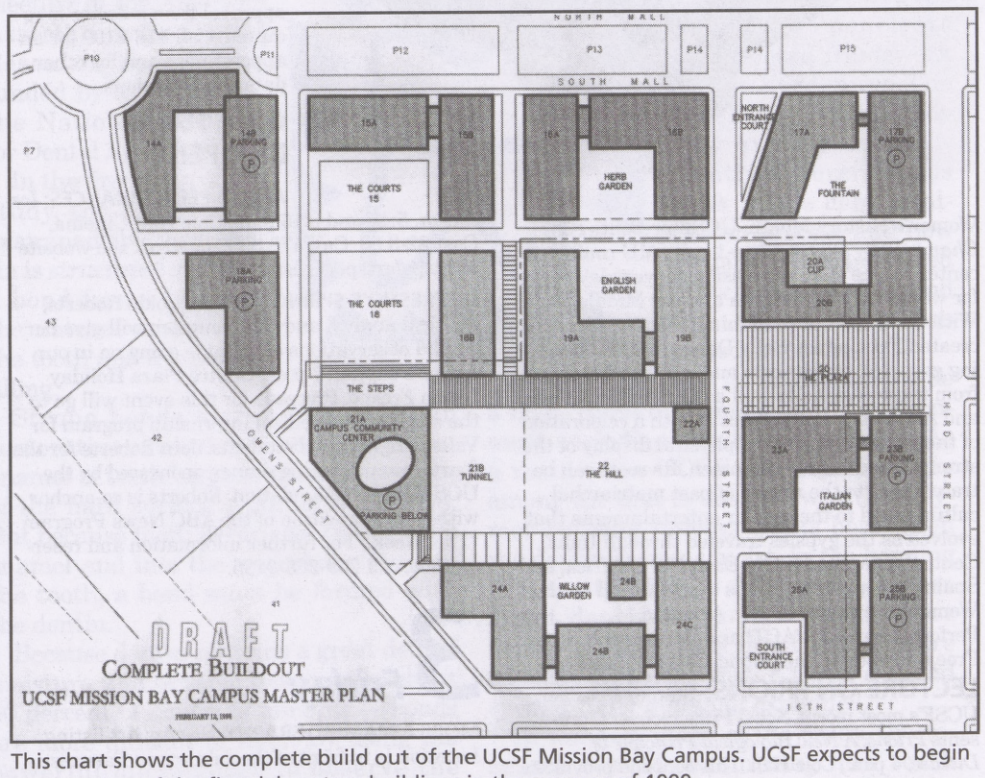
The campus expects to begin construction of the first laboratory buildings at Mission Bay in the summer of 1999. The campus came one step closer to construction March 16 when the San Francisco Board of Supervisors approved the donation of 1.34 acres of land for the project. The city will be giving the University a total of 13 acres of land and Catellus Development Corp. is donating 30 acres. Upon completion, the new research campus will be about three-quarters the size of the main campus site on Parnassus .

Specific roles assigned to the UCSF Mission Bay Campus LLC, which will be staffed by BALSA and UCSF employees, include the following:

- Managing the preparation of the UCSF Mission Bay master plan and developing strategic long-range development and financing options.
- Promoting the Mission Bay site to other research organizations whose presence would enhance the academic mission of UCSF.
- Managing the design, construction, and financing of buildings, and providing property management programs when requested to do so by the University.
- Leasing or selling to the University buildings developed by the company. UCSF expects to enter into one or more ground leases to allow the Mission Bay Campus LLC to develop buildings at the site.

The plan calls for the UCSF Mission Bay Campus LLC to be formed through contributions from both parties. BALSA agrees to contribute $2 million in working capital and ongoing staff support. UCSF's contribution will consist of any future ground leases at the site and ongoing staff support.

The agreement will remain in effect through 2015, though either party will have the right to withdraw with one year's notice.



This chart shows the complete build out of the UCSF Mission Bay Campus. UCSF expects to begin construction of the first laboratory buildings in the summer of 1999.

Stroke recovery might be speeded by electrical stimulation of the brain

By JEFFREY NORRIS

The schoolchild's fantasy of learning without really paying attention might not be so farfetched after all, although recovering stroke patients, not schoolchildren, may be the most likely to ultimately benefit from a technique that could potentially make such learning possible.

In a study that appeared in the March 13 issue of Science, researchers with the W. M. Keck Center for Integrative Neuroscience at UCSF used mild electrical stimulation in mature rats to quickly bulk up brain regions that perceive and interpret sounds. They suggest that a similar strategy might help stroke patients recover lost brain functions such as speech, accurate hearing and movement.

Michael Merzenich, the Francis A. Sooy Professor of Otolaryngology at UCSF, has for almost two decades studied the ability of the brain to learn and in so doing to form new networks of nerve connections. Merzenich pioneered the new idea, now well accepted, that adults as well as growing children exhibit these brain changes. In his research into this phenomenon, termed "brain plasticity," Merzenich has concentrated on refining maps of the brain regions that represent sensory and motor stimuli.

Both children and adults rely on plasticity to remodel the detailed connections in the brain during learning. Brain plasticity underlies the progressive development of all of our behavioral skills and abilities, Merzenich explained, and it contributes critically to the maintenance of our abilities to recognize and discriminate among incoming stimuli and to respond appropriately. Brain plasticity also contributes to progressive recovery from brain trauma such as stroke.

Thanks to brain plasticity, stroke patients often regain a substantial amount of the brain function lost after brain cells die. Exercises to regain control over movements or to recover the ability to speak or to understand language, for example, often lead to significant post-stroke recovery.

However, for psychological and neurological reasons, stroke patients often lack the will to participate vigorously in rehabilitation programs. And because brain resources are more limited after a stroke, it is often difficult for a patient to voluntarily and reliably produce normal movements or speech.

Experiments conducted by Merzenich and graduate student Michael Kilgard on the auditory cortex, the brain region responsible for sound processing, now have revealed a greater degree of brain reorganization than has ever previously

(See **Stroke** on page 8)

March 28–April 10, 1998

28 Saturday

OSTEOPOROSIS WORKSHOP: The UCSF/Mount Zion Center on Aging presents *Osteoporosis: The Silent Thief,* 8:30 a.m.-12:30 p.m., Laurel Heights conference center auditorium, 3333 California St. The workshop will focus on health issues of particular concern to seniors. Clinical experts at UCSF will give attendees information to help them be proactive about their own health and well-being. Workshops are free, but pre-registration is required. Call 750-5342.

30 Monday

ABOG CAREER SEMINAR: The Academic Business Officers Group (ABOG) presents *Managing Your Career in the 21st Century*, 11 a.m.-1 p.m., S 214. Presenter Patricia Furlong, training consultant, career planning and personal development, will discuss the framework for professional and career development. For more information, contact Rod Kempton at 476-4841.

CAREER DEVELOPMENT WORKSHOP: ABOG sponsors a presentation by Patricia Furlong, career development consultant, *Managing Your Career in the 21st Century,* 11 a.m.-1 p.m., S 214. Topics will include self-assessment, skills assessment, and more. This presentation will give you a framework for identifying, implementing, and achieving your professional goals. For more information, contact Rod Kempton by email at kempton@itsa. ucsf.edu or by phone, 476-4841.

AIDS SEMINAR: Scott W. Miller, informatics nurse specialist and AHCPR predoctoral fellow, presents *Socio-cultural Aspects of Adherence for Persons with HIV/AIDS,* noon-1:30 p.m., 1388 Sutter St., 11th Floor. Sponsored by the Institute for Health Policy Studies and the Institute for Health & Aging. Call 476-4921.

COMMUNITY MEETING: The UCSF Community Advisory Group (CAG) will meet from 6:30 to 8:30 p.m., UCSF Laurel Heights Conference Center, 3333 California St. Formed as part of UCSF's commitment to involve a broad representation of citizens in campus planning, the CAG has been asked to help guide the campus through the implementation of UCSF's Long Range Development Plan. The public is invited to attend. If you have any questions, contact the Community & Governmental Relations Office at 476-3206.

31 Tuesday

NEW EMPLOYEE ORIENTATION: 8:30-10:30 a.m., S 214. Call Leonard Florendo in Human Resources at 476-1073 to schedule.

MEDITATION CLASSES: Conducted by Brahma Kumaris Meditation Center and sponsored by the Institute of Healing Arts and Sciences, noon-1 p.m., S 158. Free. Call 563-4459

BELLY DANCE PERFORMANCE: In celebration of Women's History Month, UCSF presents *Fat Chance Belly Dance,* noon-1 p.m., MU conference center. Dance is an expression of everyday life for women in North Africa and the Middle East. With these traditions in mind, Carolena Nericcio created Fat Chance Belly Dance in 1987 blending gestures, movements and cultural influences from these regions as well as Central Asia, India and Andalusia. Belly dance is both a celebration of the female spirit and a physical display of the strength and beauty of women. Its roots can be traced back to the rituals of past matriarchal cultures and to the secular entertainments that evolved as the gypsies traveled through India, Central Asia, the Middle East, North Africa, and Spain. This performance is co-sponsored by the Women's Resource Center, Arts and Performances/EMPACT! and Reprographics. Free and open to the public. Call 476-5222.



LECTURE ON PRIONS: Stanley Prusiner, UCSF's most recent Nobel Prize recipient, presents *Prions: A New Biological Principle of Disease,* 4 p.m., Cole Hall. This occasion provides a wonderful opportunity for members of the campus and local community to hear from Prusiner about the work that has earned him international recognition. The talk will be simulcast to HSW 302; N 217; SFGH Medical Library, Room 3208; Mount Zion's Herbst Hall; VAMC's Teak Room; and MCB, 4th Floor Commons. All welcome. Sponsored by the Herbert W. Boyer Fund and co-sponsored by Chancellor Haile Debas.

APRIL

1 Wednesday

PATHS TO LEADERSHIP FOR WOMEN AT UCSF: The Faculty Women's Leadership Subcommittee of the Chancellor's Advisory Committee on the Status of Women presents a panel discussion on the role models of various paths to leadership at UCSF, 10 a.m.-1 p.m., MU Conference Center. Panel speakers include Virginia Ernster, School of Medicine; Mary Anne Koda-Kimble, School of Pharmacy; Jane Norbeck, School of Nursing; Molly Cooke, School of Medicine; and Barbara Gerbert, School of Dentistry. Lunch will be served. All women faculty are invited. RSVP required. Call Candace Love at 502-7282 for more information.

BROWN BAG LECTURE: Zach Hall, Vice Chancellor for research and professor, physiology, presents *Mission Bay: The Challenge of Building a New Campus,* 12:10-1 p.m., HSW 300. Hear how UCSF is preparing itself for the challenge of the 21st Century. Sponsored by Public Service Programs. Call 476-4394.

CAMPUS ACCESSIBILITY DISCUSSION: The Disabilities Interest Group (DIG), a campus organization open to students, staff, and faculty, is having a meeting, 5:30 p.m., S 118. The topic of discussion is on campus accessibility — what exists and what is needed. Four staff and administration members from UCSF are invited to answer questions and share information. For more information, contact Alice Wong via email at alwong1@itsa.ucsf.edu.

ENRICHMENT SERIES: The Office of Student Relations presents *Straight Talk on Consulting: Helping You Decide,* 6:30-7:30 p.m., HSW 301. Presenter Mariam Naficy, a second-year MBA student at Stanford Business School, has spent two years as an investment banking analyst at Goldman Sachs in New York and two years as a consultant at Gemini Consulting in San Francisco. Her research for The Fast Track took her from the CEO's office to the front line, involving interviews with executives, as well as graduates. Refreshments provided. For more information contact Maureen Conway at 502-2442.

BASIC SEA KAYAKING: Outdoors Unlimited presents Basic Sea Kayaking, 7 p.m. This introductory two-day class is recommended for first-time paddlers. They will focus on basic paddle strokes, equipment, tides and currents, rescue and emergency procedures. Both days will be held in sunny Marin. This clinic is a pre-requisite for the brace/rudder and surf clinics. Cost is $108/139/155 (boat and equipment included). For more information call 476-2078.

2 Thursday

MOBILE MAMMOGRAPHY: The UCSF van offers convenient breast cancer screening, 9 a.m.-3 p.m., Daly City, 333 Gellert Blvd. The exam costs $75 and takes about 20 minutes. Written or verbal approval from a doctor is required. Call 476-2193 for an appointment and for other dates and locations.

COLE HALL RE-OPENS

ARTS & PERFORMANCES: *Ice Storm*, 5:45 and 8:15 p.m., Cole Hall Cinema. Cost $2-3.50. Call 476-6932 or check the website at http://artsperf.ucsf.edu.

UC FRESNO'S SPRING DINNER: Cokie Roberts, political analyst and commentator, will give her candid observations on what is going on in our nation's capital, 7 p.m., Centre Plaza Holiday Inn in Fresno. Proceeds for this event will go to the summer biomedical internship program for Valley High School students. Join Roberts for the fourth annual spring dinner, sponsored by the UCSF-Fresno Foundation. Roberts is co-anchor with Sam Donaldson of the ABC News Program "This Week." For further information and reservations, call 209-265-3135.

3 Friday

MOBILE MAMMOGRAPHY: See April 2 listing. Location is in front of the Library on Parnassus.

WELLNESS LECTURE: Robert Turner presents *Homeopathy for Psychological Problems,* noon, HSW 300. Although known more for treating physical problems, learn how homeopathy is a wonderful alternative treatment for psychological problems and how it can offer an enormous potential for healing. Sponsored by the Institute of Healing Arts & Sciences. Free. Call 584-4416.

ARTS & PERFORMANCES: *Ice Storm*. See April 2 listing. Showtimes are 6:30 and 9 p.m.

4 Saturday

EASTER EGG HUNT: UCSF's 5th annual benefit for patient amenities, 8:30 p.m., FAO Schwartz.

CONFERENCE: The department of history of health sciences, with support from the Culpeper Fund and UC Humanities Initiative, presents *Intimate Portraits: Body Imaging Techniques in Medicine in Culture,* 8:50 a.m.-5 p.m., Millberry Union. This conference will include reflections on the cultural and historical meanings of X-ray technologies, the use of imaging technologies in picturing illness and disease, and its impact on patients' lives. The afternoon will focus on the historical role of UCSF as a pioneer in body imaging. The conference will conclude with audience discussion. This event is free and open to the public. Please call 476-2766 for information.

5 Sunday

DAYLIGHT SAVINGS BEGINS

PALM SUNDAY



6 Monday

SEMINAR: Theresa Montini, IHPS/IHA fellow, presents *Bottom(s) Up Policy Analysis: The Care of Community Activism to Limit Alcohol Availability,* noon-1:30 p.m., 1388 Sutter St., 11th Floor. Sponsored by the Institute for Health Policy Studies and the Institute for Health & Aging. Call 476-4921.

8 Wednesday

BLOOD DRIVE: The April campus blood drive will take place 9 a.m.-5 p.m., in MU Conference Center. Please stop by at your convenience. Snacks will be provided by Noah's Bagels, Suzanne's Muffins and Tart-to-Tart; beverages provided by Trader Joe's. Raffle is compliments of: the Radisson Miyako Hotel (weekend stay for two); Gabbiano's (Sunday brunch for two); Carta (Sunday brunch for two); and the San Francisco Giants (four tickets). Should you have any questions, please call Ally Mok at 476-6989.

BROWN BAG LECTURE: Ellen Heller, director, WomenCare Mental Health Clinic and associate adjunct professor, psychiatry, presents *Depressed or Am I Just Tired?,* 12:10-1 p.m., HSW 300. Heller will discuss how depression is a common serious and treatable illness which effects women twice as often as men. Sponsored by Public Service Programs. Call 476-4394.

9 Thursday

ENRICHMENT SERIES: The Office of Student Relations presents *Finances: Your Income Tax Questions and Answers,* noon, N 217. Students receive money in a variety of ways that may or may not affect their taxes: salaries, stipends, fellowships, scholarships, financial aid. Get expert advise from professional presenters who have experience in that area where we all need help: money. Presenters: Derrick Quan, CPA, Unsource Financial Group, San Francisco and Nancy Kull, director, Student Financial Services. Refreshments will be provided. For more information, contact Maureen Conway at 502-2442.

ARTS & PERFORMANCES: *Amistad*, 5:45 and 8:15 p.m., Cole Hall Cinema. Cost $2-3.50. Call 476-6932 or check the website at http://artsperf.ucsf.edu.

10 Friday

GOOD FRIDAY

MOBILE MAMMOGRAPHY: The UCSF van offers convenient breast cancer screening, 9 a.m.-3 p.m., Lakeshore Plaza, 1501 Sloat Blvd. The exam costs $75 and takes about 20 minutes. Written or verbal approval from a doctor is required. Call 476-2193 for an appointment and for other dates and locations.

ARTS & PERFORMANCES: *Amistad*. See April 9 listing. Showtimes are 6:30 and 9:30 p.m.

UPCOMING EVENTS

Breast cancer symposium

The UCSF Cancer Center's second annual symposium will be held all day in Cole Hall, April 30. Scientists and researchers from UCSF, Harvard Medical School, Massachusetts General Hospital, Memorial Sloan-Kettering Cancer Center and the National Cancer Institute will be making presentations on breast cancer epidemiology, the cancer risks associated with BRCA 1 and 2 genes, cancer genetics, signaling in breast cancer biology, breast cancer imaging technology and shared decision making in breast cancer. The symposium will also be broadcast to remote sites at UCSF/Mount Zion, VA Medical Center and San Francisco General Hospital. Call Amy Akbarian at 476-9727 for information.

Forum on our future

Zach Hall, vice chancellor for research, is the keynote speaker of a spring conference to discuss the future of UCSF and how to work together at a time of expansion and change. Sponsored by the Academic Business Officers Group (ABOG), the conference will be held at the Laurel Heights auditorium from 8:30 a.m. to 4:30 p.m. on Thursday, April 30. Hall will give an overview of his role in the development of the new campus at Mission Bay and how it will influence future research at UCSF. Other forum topics include customer service in the workplace and financial planning. Cost is $75 for ABOG members and $90 for non-members. Registration deadline is Wednesday, April 15. Call Lily Ann Mendoza at 476-8320 for more information.

Addiction center inaugural scientific forum

UCSF is sponsoring a scientific symposium on the neurobiology of addiction, Thursday and Friday, May 7 and 8. The symposium will feature talks by preeminent scientists on research of the neural circuits, molecular targets, and biochemical actions that underlie the ability of drugs of abuse to take command of the brain. In addition, a special panel discussion will take place directed to the lay audience with focus on the biology of addiction, treatment successes and failures, and the social and economic costs of addiction. The special presentation will immediately precede the scientific symposium, and attendance will be by invitation only. Panel participants will include Alan Leshner, director of the National Institute on Drug Abuse, and several prominent UCSF researchers and clinicians.

Benefit concert

Millberry Programs & Services presents the 6th Annual Grand Celebration Benefit Concert, May 26 at 7 p.m., Florence Gould Theater, Palace of the Legion of Honor, 34th Ave. at Clement. Come back to the beautiful theater in the Legion to hear UCSF's finest jazz and classical musicians. Proceeds benefit the UCSF Piano Group's Save the Steinway Fund. Tickets are $10 and can be purchased by mail after April 20. For more information, or an order form, call 476-6932.

UCSF Cancer Center to host second annual symposium

By DALE MARTIN

Leading breast cancer researchers from UCSF and around the country will participate in the second annual UCSF Cancer Center Symposium on April 30 in San Francisco.

Topics ranging from cancer genetics to shared decision making between patient and physician will be addressed by physicians, researchers and patient-advocates in the daylong symposium.

Scientists from the Dana Farber Cancer Institute at Harvard University, the National Cancer Institute and Memorial Sloan-Kettering Cancer Center will join faculty members from UCSF in the program.

"Here at UCSF we are developing a multidisciplinary program in breast cancer which focuses on translating breast cancer research into the best patient care available. In this, our second annual symposium, we've invited nationally known breast cancer researchers to help us highlight some of the recent important developments in breast cancer research and treatment," said Frank McCormick, director of the UCSF Cancer Center and chair of the symposium.

The day will intertwine developments in breast cancer research with the latest in treatment. Among the speakers will be UCSF epidemiologist Virginia Ernster, who will provide an overview of breast cancer epidemiology; Jeffery Struewing of the National Cancer Institute, who will discuss the BRCA 1 and 2 gene and cancer risk estimates; and David Livingston, of the Dana Farber Cancer Institute, who will discuss functional analysis of the BRCA 1 gene product.

Other presenters include Laura Esserman, director of the UCSF Breast Care Center at UCSF/Mount Zion, part of UCSF Stanford Health Care, who will discuss developing technology in breast cancer imaging; Larry Norton, of Memorial Sloan-Kettering, who will discuss multifactorial carcinogenesis in breast cancer; Joe Gray, UCSF professor of laboratory medicine and radiation oncology, who will discuss cancer genomics; and Edison Liu, of the National Cancer Institute, who will make his presentation on signaling in breast cancer biology. In addition to some of the scientific presentations, Deborah Collyar, a patient-advocate with UCSF will discuss shared decision making with Albert Mulley Jr., of the Harvard Medical School and Massachusetts General Hospital.

The event is dedicated to the memory of the late Helene Smith, an expert in molecular and cellular biology of breast cancer. Smith, who died last year from breast cancer, was director of the Geraldine Brush Cancer Research Institute at the California Pacific Medical Center. She was also a principal investigator of the NCI Breast Cancer Program Project and co-principal investigator of the Bay Area Breast Cancer Specialized Programs of Research Excellence (SPORE) Program based at UCSF.

The UCSF Cancer Center includes a clinical cancer center, and a cancer research building that serves as an umbrella for 250 scientists throughout UCSF. Under the direction of McCormick, UCSF is seeking to become the first cancer center in Northern California to be designated as a comprehensive cancer center by the National Cancer Institute.



Ann Chamberlin

The Cancer Center healing garden and tile wall at UCSF/Mount Zion Medical Center

UCSF ahead of the curve on same-gender harassment

The US Supreme Court ruled on March 4 that the existing federal law that bans on-the-job sexual harassment also applies when the harasser and victim are of the same sex.

UCSF has been ahead of the curve on this issue, expanding its sexual harassment policy in 1996 to include language pertaining to same-sex harassment. In fact, the Office of Sexual Harassment Prevention and Resolution has sponsored seminars for advisers and the campus community to discuss the issue.

"The seminars seemed timely to do given the evolution of this topic in the workplace," said Alma Sisco-Smith, program director.

When UCSF's policy was revised in 1993, it was, at that time, "forward-thinking," Sisco-Smith said. But it did not include language about same-gender harassment because that protection was not clearly delineated by state and city labor codes, she said. Soon after the revised policy was enacted, more incidences of same-gender harassment began to be reported, not only at UCSF but also throughout the country's workplaces.

Same-gender harassment does not seem to be rampant at UCSF or at the other UC campuses, Sisco-Smith said. However, at UCSF, five of the 51 active cases from 1996-1997 concerned people of the same sex.

The same-gender sexual harassment seminars are being held mainly to educate the UCSF community about the legal definition of harassment, UCSF's harassment policy and how harassment can be played out between people of the same gender. The presentations include people acting out scenarios of harassment and reviewing UCSF's policy, which is aimed at curbing inappropriate behaviors before they meet the legal definition of harassment.

Sisco-Smith said more education is needed. Managers, supervisors and faculty have definite responsibility and liability on the issue, she said.

"If same-gender cases get perceived or evaluated differently, that's the frailty piece," Sisco-Smith said. "There's some indication that we're not consistently handling this issue."

— Paula Murphy

MEDICAL CALL BOARD

Drug treatment study of dementia

Men and women with vascular dementia who are experiencing memory loss due to a previous stroke are needed for a UCSF study evaluating a new medication to be used in treating symptoms of the condition.

The purpose of the study is to evaluate the efficacy and safety of Donepezil Hydrochloride (E2020), an FDA-approved drug that is already being used in the treatment of Alzheimer's disease. The Center for Clinical & Aging Services Research of the UCSF-affiliated Goldman Institute on Aging is conducting the study.

People enrolled in the study will be randomly assigned to receive either a placebo or active Donepezil. The medication will be taken orally once a day for 24 weeks. After the 24 weeks, patients may be eligible to continue on the medication for an additional 30 weeks. The study involves making regular visits to Lakeside Senior Medical Center, 2501 Ocean Ave., San Francisco.

To determine eligibility, a series of screening exams will be conducted, including a medical history, physical and neurological exams, cognitive tests, an electrocardiogram and clinical laboratory tests. An MRI or CT scan may also be required. All exams and treatments will be performed free of charge.

For more information, contact Meryl Brod or Hazel Outlaw at the Center for Clinical & Aging Services Research of the Goldman Institute on Aging at 386-3100.

Microscope designed to analyze jet engine components reveals intricate structure of tooth dentin

By BILL GORDON

Using an X-ray microscope developed at Lawrence Livermore National Laboratory for the Department of Energy, researchers at UCSF's School of Dentistry are probing the intricate structure of dentin, the porous material that lies under the hard enamel of teeth.

An X-ray tomographic microscope (XTM), invented by a Lawrence Livermore scientist to analyze ceramic components used in jet engines, allows the dental researchers to observe structures in the dentin as small as two micrometers — about the size of a human cell.

Atomic force microscopy (AFM), another technology used at UCSF and Lawrence Livermore, provides an even closer view. Researchers test the strength and stiffness of dentin by pushing the very atoms and molecules apart and using the device to observe how they respond.

Researchers want to understand the structure and properties of dentin in order to find methods and materials that will create a tighter, more permanent bond between the tooth and the plastic-based fillings now used to repair most cavities.

Metal alloys create a more durable restoration than newer plastic-based and ceramic materials used for filling tooth cavities, but the ability to match the color of these materials to the natural color of a tooth makes the newer materials much more popular choices.

"We want to make the polymer (plastic-based) and ceramic materials as strong and long-lasting as metal," explained Sally J. Marshall, UCSF professor of restorative dentistry. She and Grayson W. Marshall Jr., UCSF professor of restorative dentistry, led the UCSF research team working with John H. Kinney, senior research scientist at Lawrence Livermore.

The team of researchers recently reported on the progress of their study at the annual scientific meeting of the American Association for Dental Research. The study is funded by a grant from the National Institute for Dental Research.



In the first stage of the study, the researchers examined the way dentin is structured and how a bond forms between the natural material of the tooth and the plastic filling.

Strong bonds form easily between restorative materials and the surface enamel of teeth because about 97 percent of the hard surface material is mineral. But because tooth decay eats through the enamel and into the underlying layer of the tooth, a bond must be formed with the dentin.

Because dentin contains a great deal of moisture and organic tissue, only about 50 percent of dentin is mineral — bonds are more difficult to form. By using the powerful microscopes to observe the bonding process, the UCSF researchers now can offer a better explanation of the reasons bonds succeed and fail.

When dentists prepare a tooth for bonding a filling, they use an acid to demineralize the surface of the cavity. This process removes the mineral material from the dentin, leaving a framework of collagen tissue and tiny tubules that run from the center of the tooth toward the surface.

When a plastic-based filling is placed in the cavity it is in a liquid form, allowing the material to penetrate the exposed framework before hardening. The UCSF researchers study how quickly and efficiently different acids work in the demineralization process and how various materials used to form bonds withstand the constant stress placed on teeth.

AFM is unique in its ability to provide a high- resolution image in any environment, including wet or acid solutions. As a result, the UCSF researchers were among the first to describe why the polymer bonding process works best when the dentin remains moist. In the bonding process the liquid filling penetrates moist dentin more easily than drier dentin — much as a moist sponge more quickly absorbs water than a dried sponge, Sally Marshall explained.

In the next stage of the study, the research team is examining how tooth decay progresses differently in different areas of dentin and how age affects the process of tooth disease.

UCSF computer graphics maven demonstrates the Next Generation Internet

By ANDY EVANGELISTA

While many are just now finding the Internet to be a valuable tool, researchers already are speeding down the information highway to develop the Internet of the next generation.

Tom Ferrin, director of the UCSF Computer Graphics Laboratory, was one of 18 university, government and industry scientists who demonstrated the power and potential of the Internet to members of Congress, other policy makers and national media in Washington, DC.

Ferrin's laboratory, which is a National Institutes of Health/National Center for Research Resources Center, has for many years developed and supplied graphics software to investigators around the world studying protein and DNA structure. The programs allow researchers to design computer models — of such elegance that they often are pictured on the covers of scientific journals — and to see how any two structures interact. They are essential to drug designers trying to develop inhibitors and protagonists for proteins and DNA that play a role in human disease and ailments.

At the high-tech show-and-tell in the nation's capital, Ferrin exhibited how Internet technology can improve structure-based drug design.

"Many have looked at the Internet as a way to publish, distribute or obtain information," he said. "It is now much more than that. We're not just accessing information, we're fostering true collaboration."

Ways to make the Internet more interactive and join individuals with common interests are being tested all around the country. All forms of audio, visual and other media — including windows on monitors showing the person at the other end of the computer hookup — are being incorporated on the Internet, said Ferrin. "It's like the telephone, but with very rich forms of visualization."

In his case, the visuals include molecular graphics. Ferrin and co-investigators in the department of pharmaceutical chemistry have developed a prototype "collaboratory" that will allow scientists from around the country to share and interactively manipulate three-dimensional molecular models for applications such as drug and biomaterials design and protein engineering.

When the White House Office of Science and Technology Policy heard of the prototype, it invited Ferrin to the March 11-13 "Netamorphosis," a demonstration of the "21st-Century Internet" for Washington VIPs. The event showcased technologies and applications enhanced by President Clinton's Next Generation Internet (NGI) Initiative and national research and development programs.

Ferrin, who had only about two weeks' notice to prepare for the demonstration, packed computers, software, posters, special 3-D glasses to view computer graphics, and other equipment for Washington, DC. On opening night, he and UCSF co-researcher Teri Klein showed off the drug-design collaboration potential to members of the President's Advisory Committee on High-Performance Computing and Communications, Information Technology and the NGI.

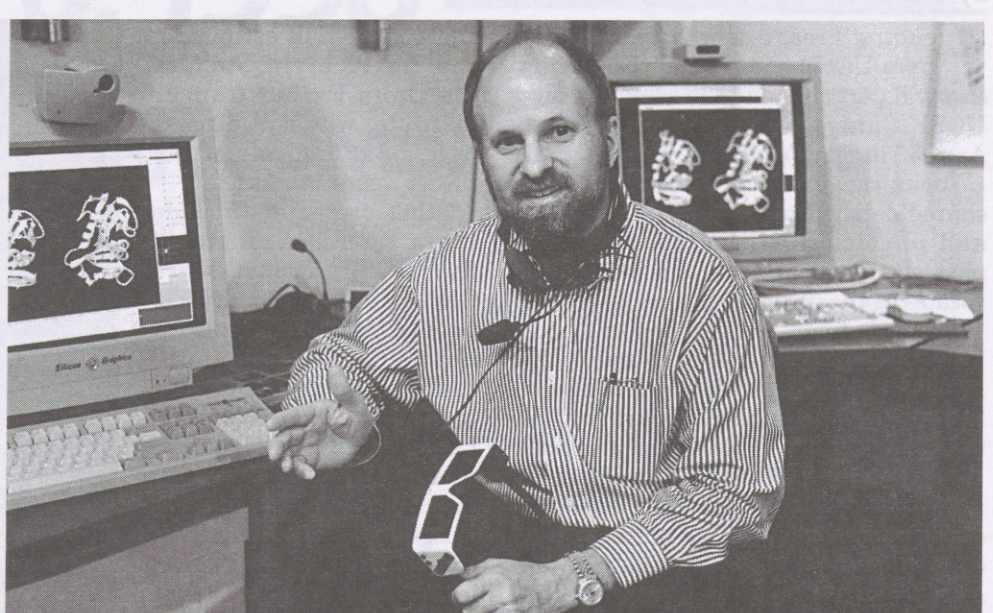
"There was a lot of excitement and good questions at the demonstrations on all three days," said Ferrin. "We left exhausted every evening." And the consensus among the viewers, who included senators and House representatives, was "yes, this is what we need to do," he said.

Other next generation demonstrations in Washington included battle simulations, interactive drama that allows users to engage video characters in face-to-face dialogue concerning realistic and dramatic situations, and a "brain in action," which via MRI allows viewing of a person's brain activity while she or he executes cognitive or sensory-motor tasks.

According to the NGI Initiative, some of the capabilities the next generation Internet will have that today's Internet does not have include:

- Networks will be able to connect at least 100 universities and national labs 100 to 1000 times faster than today's Internet. These networks will eventually be able to transmit the entire Encyclopedia Britannica in under one second.
- An increased ability to handle real-time, multimedia applications such as video-conferencing and "streams" of audio and video — very important for telemedicine and distance education.
- Sufficient bandwidth to transfer and manipulate huge volumes of data. If you have just become familiar with the term megabyte, technologists are now talking about "terabytes" (a trillion bytes). Satellites and scientific instruments will soon generate a terabyte of information in a single day. (The printed collection of the Library of Congress is equivalent to 10 terabytes.)
- The ability to access remote super computers, construct a "virtual" supercomputer from multiple networked workstations, and interact in real-time with simulations of tornadoes, ecosystems, new drugs and more.
- The ability to collaborate with other scientists and engineers in shared, virtual environments, including reliable and secure remote use of scientific facilities.

The last two examples made the UCSF computer graphics project attractive to the national NGI experts. For more than 20 years, the Computer Graphics Laboratory has hosted groups of researchers from many parts of the country — and world — so they together can display, rotate and contort detailed 3-D images of molecules and the thousands of atoms they contain. The process allows them to bring together two models — an enzyme and the target substance it acts upon, for example — to determine if they bind. If the binding site of a drug is known, a computer can be used to investigate the details of molecular recognition, including how the molecular structure of the receptor might change after the drug has latched onto it.



Ferrin, pictured here in his UCSF laboratory, recently demonstrated to President Clinton's advisers the Internet's role in the future.

Computer modeling has cut down enormously the time it takes to design drugs. Chemists no longer have to synthesize thousands of potential drugs to see which will inactivate an enzyme. Once the active site of the enzyme is known, scientists can use this information to guide the development of initial versions of drugs, or 'lead compounds', that might work and have the computer evaluate them.

Although computer graphics are a major advance over techniques used in the 1960s — when scientists used tinker toy-like materials to construct a model that could fill almost an entire room — today's methods are not without glitches. Busy scientists, for example, must coordinate schedules to travel to a single site for their collaborations.

The prototype developed by Ferrin's group allows real-time, transcontinental collaboration among scientists equipped not only with the computers, 3-D glasses

(See **Ferrin** on page 8)

Ultrasound (from page 1)

methods carry a slight risk of miscarriage, and ultrasound screening may cut down on unnecessary invasive testing, Goldberg said.

Along with a fetus' nuchal translucency thickness and gestational age and size, a woman's maternal age and history of other children with Down's syndrome are part of a formula that calculates her risk of having an affected pregnancy.

According to Goldberg, this screening process currently has a five percent false positive rate. "In the past, one of the problems with this approach has been an absence of uniformity in the way the nuchal translucency thickness is measured," he said. "The critical part is to measure consistently and apply the results to a formula that warrants accurate risk factors."

Goldberg recently received training to perform fetal nuchal translucency screening from the Harris Bright Research Center for Fetal Medicine at King's College in London where a uniform method for measuring and interpreting nuchal translucency thicknesses was formulated. The center's method has been applied to over 100,000 pregnancies in Europe.

"We feel that this technique has been sufficiently established by the large number of cases performed in the UK"

–JAMES GOLDBERG
UCSF geneticist

"We feel that this technique has been sufficiently established by the large number of cases performed in the UK," notes Goldberg. "We will maintain our quality assurance information to ensure that we are conducting this procedure appropriately."

CAMPUS BRIEFS

Catastrophic leave

On Feb. 25, the Chancellor's cabinet gave final approval for UCSF's Voluntary Catastrophic Leave Sharing Program. The program gives eligible staff and non-faculty academic personnel the opportunity to donate accrued vacation in support of colleagues who have exhausted their leave due to their own serious illness or in caring for a seriously ill family member. Human Resources will conduct a briefing on the Voluntary Catastrophic Leave Sharing Program on Thursday, April 16 from 8:30 to 11 a.m. in Toland Hall. The briefing will cover the components of the program and procedures for donation of leave.

Sexual assault awareness

April is sexual assault awareness month, and the Rape Prevention Education Program (RPEP) will be providing free limited 60-minute trainings to departments or organizations about sexual assault and rape. The training will focus on myths about sexual assault and rape, what to do if you are assaulted, how to help someone you know who has been assaulted and safety information.

The workshop will be offered from April 20 to 30 and is open to the first five departments that sign up. Participation is limited to 25 people per workshop (special arrangements may be made for larger staffs). Each department will need to provide presenter with TV and VCR. The registration deadline is April 10. Departments interested in participating should contact Dannie Tillman, RPEP coordinator, at 476-5223 for more information.

Emergency hotlines

New telephone hotlines have been established to provide emergency communications to the UCSF campus and UCSF Stanford Health Care communities. The hotlines were set up as part of the ongoing Campus Emergency Preparedness Program, headed by Lynda Purves in the UCSF police department.

Campus Emergency Information Hotline: 502-4000

The UCSF Police and Campus Emergency Preparedness Program will use this emergency hotline for emergency announcements and status updates following an emergency situation or unusual occurrence affecting the campus. "If we had a situation, such as a power failure, and we know the power will be down for six hours, we can put a message on the voicemail," Purves said. "It's one way to get information out."

Medical Center Emergency Hotline: 885-STAT

The Medical Center has established this hotline for UCSF and UCSF Mount Zion Medical Centers to provide information on Medical Center disasters or emergency situations, and for employee recall information.

800 Hotline: 1-800-873-8232

This existing 800 number is set up at UC Davis and will be used to communicate emergency information only when local telephone service is interrupted, Purves said. Recorded messages will be placed on this line with separate message options. Campus and Medical Center staff can contact this number to receive emergency instructions and status information concerning the emergency event.

Eyeglasses needed

The UC Berkeley/UCSF student-run Homeless Clinic is seeking donations of old or unused eyeglasses and frames. The Homeless Clinic provides a variety of services for area homeless and low income population, including medical care, social services, legal services, haircuts, and optometry services through the UCB School of Optometry. Clients come to the clinic, and are sent to the School of Optometry for eye exams and free glasses, if they are needed. While the clinic pays for lenses, the frames come exclusively from donations and they are currently in short supply. Please bring your donations to the lobby of the Medical Sciences Building, April 2-3 between 7:30 a.m. and 5 p.m. Contact Curtis Chan at 665-3221 for information.

American Cancer Society research grants available

UCSF Cancer Center is now receiving applications for cancer research grants of up to $20,000 from junior faculty. This program is funded by a grant from the ACS. Application deadline is April 15. For application forms and further information, contact Denise Jones-Wallis at 476-8824 or via email at dwallis@cc.ucsf.edu. Or download the forms from the Cancer Center website at http://cc.ucsf.edu.

Adherence — the Achilles' heel of AIDS treatment

By PAULA MURPHY

Although antiretroviral drugs work remarkably well in reducing the viral load of HIV, the regimens that accompany them are often so complicated that one quarter of patients don't adequately adhere to them.

Non-adherence is a problem in treating most diseases. But with HIV, non-adherence has more consequences than the usual short-term loss of treatment effectiveness — it leads to emergence of drug-resistant strains of the disease, resulting in permanent loss of effectiveness. Not only does the patient suffer, but so perhaps does the greater society, which may then be subjected to more drug-resistant strains of HIV.

UCSF faculty members Margaret Chesney, professor of medicine at SFGH and co-director of the Center for AIDS Prevention Studies; Paul Volberding, UCSF professor of medicine, director of UCSF Center for AIDS Research and director of the AIDS program and medical oncology at SFGH; and Frederick Hecht, assistant clinical professor of medicine, UCSF AIDS Program at SFGH, discussed this increasingly salient issue at a recent Dean's Research Seminar titled "Adherence: The Achilles' heel of antiretroviral treatment for HIV?" Their conclusion: adherence is very important to prevent breakthroughs of HIV disease, yet non-adherence is common.

For close to a decade, Volberding and Chesney have been studying adherence issues as they relate to HIV and AIDS. They say that since 1996, when antiretrovirals began to be widely used, HIV drug regimens have become more complex and demanding, and that no precedent exists for such intensive drug therapy to be taken on an ambulatory basis for an indefinite period of time.

Adherence is especially difficult for people who are homeless, marginally housed or substance abusers. Because some antiretrovirals need to be refrigerated or taken according to very specific instructions, these UCSF researchers suggest that partnering with other AIDS-related service programs, and using a new initiative that the University hopes to develop with the City of San Francisco to establish action centers where people can gain access to antiretrovirals, might improve adherence.

But even for educated people with resources, adherence is difficult to achieve and maintain.

Volberding told of an HIV-positive man who became his patient after already being on triple combination therapy. After eight months under Volberding's care, the patient realized that he had been mistakenly taking one pill three times a day instead of the required three pills three times a day. Because the regimens are so complicated, it is easy to understand how a patient might get confused and, Volberding said, it is increasingly difficult to go over all the information about drug regimens with patients in the short time periods allotted for patient visits through managed care.



Chesney suggested that either clinicians or others on the health care team, including nurses and pharmacists, spend more time with their patients explaining the drugs, their side effects and the importance of adherence. It has been shown that poor adherence is directly associated with the complexity of drug regimens, the number of specific medications that are prescribed and the extent to which an assigned regimen interferes with daily life, Chesney said.

The number-one reason people do not adhere, Chesney said, is that they simply forget, followed by sleeping through a dose, being away from home and changing their routine. Depression is an across-the-board factor in people missing their medications for all diseases, accounting for 10 percent of all patients, Chesney said.

In fact, the three major factors that predict breakthrough of HIV are failure to adhere to drug regimens for treating HIV, high initial viral load and prior resistance to HIV medications.

A study conducted at SFGH by Hecht, Chesney and others found that non-adherence predicts viral load detection. The team surveyed half of all clinic sessions at the SFGH AIDS clinic from January 1997 through February 1997, measuring self-reported adherence in the three days prior. They found that for people who missed no doses in the previous three days, two-thirds had undetectable viral loads. For those who adhered 80 to 99 percent of the time, approximately 60 percent had undetectable viral loads. For those who adhered less than 80 percent, approximately 35 percent had undetectable viral loads.

Research has found that people who adhere less than 80 percent of the time are at high risk for a breakthrough of disease. Chesney and Hecht are currently studying what percentage above 80 percent adherence is required for antiretroviral treatment to be effective.

Chesney said the steps clinicians can take to improve adherence are to clarify and simplify the regimen, identify reminders or cues for taking medication and provide treatment for depression, if applicable. Chesney said they will be implementing some of these interventions at SFGH in a clinical trial format to see if they improve adherence. She also said that they are using HIVInsite [http://hivinsite.ucsf.edu/]to distribute adherence information to clinicians and patients alike.

"There's an immediate need for a multidisciplinary effort," Chesney said. "We need to conduct critical research to maximize adherence in order to enhance the clinical benefit to patients and to prevent the spread of multi-drug resistant HIV to the public."

Campus celebrates commitment to women's issues

Four members of the UCSF community received the 1998 Chancellor's Advancement of Women Award March 11 during a noontime ceremony in Toland Hall. Chancellor Haile Debas presented the award, which recognizes contributions to the advancement of women and/or work to increase knowledge of women's health.

The award for faculty went to Mary Croughan-Minihane, associate professor in residence in the departments of family and community medicine and epidemiology and biostatistics. Debas described her as "one of the faculty on this campus who has devoted the most attention to women's issues." Croughan-Minihane has done research on a number of women's issues, including salary equity between men and women faculty at UCSF.

The award for a staff member was being shared by Barbara Garcia, interventionist in the California Partners Study, Center for AIDS Prevention Studies, and Heather Wilkie, public administration analyst in the Department of Epidemiology and Biostatistics.

Garcia is an HIV-positive woman and former heroin addict who has helped countless women with HIV take care of their health and provide support for each other. Debas cited her contribution of time and energy to numerous community boards. Garcia said the award has shown her that "there's always hope that really wonderful things can happen to people."

Wilkie is committed to improving women's health through innovative research, Debas said. In her ten years at UCSF, Wilkie has worked on projects on smoking interventions for women and predictors of high-risk behavior for HIV among homeless women. Although Wilkie does not consider herself a "trailblazer" she sounded a strong message for women: learn not to second-guess yourselves and don't let others second-guess you.



From left: Julia Charles, Mary Croughan-Minihane, Heather Wilkie and Barbara Garcia.

Julia Charles, a student in the Medical Sciences Training Program, received the award for a student, resident or postdoc. Through her educational and volunteer work, Charles continues to work toward improvement of health care for women, Debas said. She has helped devise a curriculum for second-year medical students in women's health, is active in mentorship programs and volunteers for a South of Market clinic for homeless women.

— *Paula Murphy*

INSIDE UCSF



Karen Preuss

Neither mudslide nor earthquake...

... nor gloom of fog stays these couriers from the swift completion of their appointed rounds.

With a population that rivals a bustling burg — at almost 17,500 faculty, staff and health care workers — it is no wonder the UCSF campus community requires its own zip code.

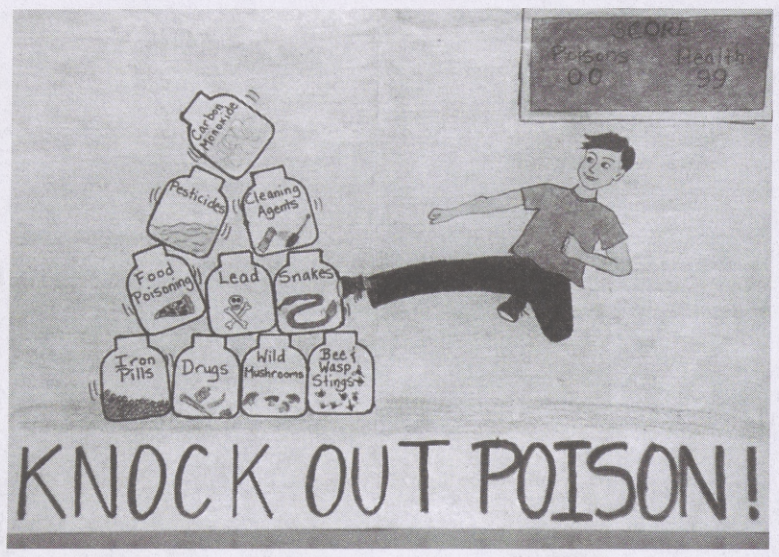
US mail trucks lumber up to the loading docks of Mail Services at Mission Center twice a day to unload first-class, third-class, bulk and, yes, junk mail. That mail is then sorted along with interoffice correspondence, and is shipped out in a fleet of vans and trucks bound for more than 500 offices on Parnassus, California, New Montgomery, Divisadero and others.

In February, approximately 689,944 pieces of mail were processed and delivered by the 35 employees of the the Mail Services department. Here are some other figures:

- Average amount of mail delivered by the US postal service to Mail Services daily: **40,000 pieces**
- Average amount of interoffice mail sent daily: **6,700 pieces**
- Total of all mail delivered to UCSF community in 1997: **10.3 million pieces**
- Heaviest mail day of the week: **Monday**
- Percentage of mail delivered via US mail without complete address: **25%**
- Percentage of mail mistakenly delivered to Mail Services: approx. **6-7%**

Source: Richard Godart, mail distribution manager

Winners named in statewide poison prevention poster contest



Three youths from San Francisco, San Jose and Gold River have been selected as top prize winners in three different categories in the first-ever statewide poster contest of the California Poison Control System (CPCS), CPCS officials have announced.

Winners received a check for $200 in formal presentations in their local communities last week, which was National Poison Prevention Week.

Six youths from around the state have been selected as second- and third-place winners in the contest and will receive checks of $100 and $50, respectively. The winning posters were selected on the basis of their creativity, originality in design, and poison prevention message.

This year's contest theme was "Children Act Fast, So Do Poisons." More than 2,000 pharmacies across the state participated in the contest, which is designed to educate parents and children about the importance of poison prevention safety.

A number of the winning entries will be incorporated into a 1999 poison prevention calendar and some will be reproduced in educational posters for distribution across the state to schools, medical centers, child care centers and other locations.

The CPCS began operation on January 1, 1997 under the administration of the UCSF School of Pharmacy and serves all 33 million California residents. The toll-free hotline service has four sites around the state: Valley Children's Hospital in Fresno, UC Davis Medical Center in Sacramento, UC San Diego Medical Center, and the UCSF-affiliated San Francisco General Hospital. In 1997, the system received more than 322,000 calls regarding poisoning emergencies. More than half of the calls to the service involve children ages five or less, according to CPCS data.

The number to call in the event of a poison emergency is 1-800-876-4766 (1-800-8-POISON). The TTY (for hearing- and speech-impaired, is 1-800-972-3323).

—Corinna Kaarlela

Ferrin (from page 6)

and devices allowing them to rotate and manipulate the computer models, but also with microphones to converse with each other.

The UCSF laboratory already has three "testbed" projects:

- A collaboration with SUNY-Stony Brook scientists looking at how DNA, routinely damaged by mechanisms including carcinogens and reactive oxygen molecules occurring naturally in the atmosphere, is repaired by specialized repair enzymes.
- A project with University of Washington, Seattle investigators looking at structural aspects of collagen, a fibrous protein which if defective can lead to an array of genetic disorders, including Osteogenesis imperfecta, a disease that causes bones to fracture easily.
- A study with Pomona College, Claremont researchers of structure-activity relationships of enzymes, which could lead to the design of more effective chemotherapeutic agents.

Ferrin estimates that a prototype of his molecular modeling collaboratory can be up and running by summertime. National, state and universitywide efforts are under way to build and wire the new high-speed Internet. Pioneering projects, including that of the Computer Graphics Laboratory, will have glitches, admits Ferrin.

Much research still must be done on how to perfect interaction via computer. At in-person group meetings, for example, people can look at expressions and gestures to sense when to pause or speak. "There are some software issues to iron out," said Ferrin. "But we're willing to lead the effort to make this work."

Stroke (from page 3)

been observed in mammals.

To spur accelerated brain reorganization in normal adult rats, Kilgard and Merzenich electrically stimulated an area called the nucleus basalis, which is located at the front of the brain below the cerebral cortex.

"Just as direct electrical stimulation in the basal ganglia now is used as a treatment for Parkinson's disease, stimulation of the nucleus basalis to coincide with an important-to-remember stimulus or movement might serve as a means to overcome motivational problems in the early epoch of stroke recovery," Merzenich said. "In extension, this strategy could quickly maximize the full potential for recovery of function in a damaged brain."

If we regarded all incoming stimuli as equally important, we would not learn successfully to adapt and respond to our surroundings, and normal mental development would not be possible, Merzenich pointed out. In a person engaged in learning, brain structures, including the relatively primitive limbus and paralimbus, help weigh the importance of stimuli to the more evolved cerebral cortex, the "thinking" brain that must further process stimuli during learning. If stimuli are deemed important, these brain structures activate the nucleus basalis.

The nucleus basalis is a gatekeeper. To bring about brain reorganization, it relays commands to the auditory cortex or other brain regions by secreting the neurotransmitter acetylcholine. The amount of this vital signaling molecule released corresponds to the speed of learning and the strength of memory, Merzenich said. Indeed, in Alzheimer's disease, treatment aims to boost the supply of acetylcholine available within the brain, without focusing on a particular brain region.

Although paying close attention to stimuli and the brain's recognition of the stimuli's behavioral importance play a critical role in activating brain regions during learning, direct stimulation of the nucleus basalis may bypass this requirement, according to Merzenich.

"Our strategy has been to trick the brain into sending a message that says 'save this,' and thereby to maximize and accelerate brain plasticity. In our experiments, electrical stimuli of the nucleus basalis clearly magnified and accelerated plasticity changes in the brain related to the progression of learning.

"These changes closely paralleled those that we previously recorded in skill learning, except that in this case changes were especially large and rapid, and were achieved in a non-attending brain. These changes are similar to some of those that must occur during successful recovery from brain injury," he said.

To explore and map out in detail the learning-related changes in the auditory cortex, Kilgard exposed normal rats to sounds of assorted frequencies and bandwidths, about 300 times a day for 20 days.

The experimental group of 21 rats received auditory stimuli coinciding with mild electrical stimulation of the nucleus basalis. Another group received the auditory stimuli but no electrical stimulation. In the electrically stimulated rats, the auditory cortex became dramatically rearranged to respond to the specific frequencies used as sound stimuli. The researchers recorded no changes in rats that were not electrically stimulated.

Brains of humans and other mammalian species have been trained to distinguish sound frequencies, but according to Merzenich, "The extent of reorganization in the auditory cortex generated by activating the nucleus basalis that we saw in the rats is substantially larger than the reorganization that is typically observed after several months of intensive behavioral training."

The brain is a highly sophisticated, self-organizing system, but additional experiments similar to those described in the Science article should lead to much more precise brain maps and to better models for explaining how reorganization of nerve networks occurs, Merzenich said.

Trauma (from page 1)

ported the project.

"The new room is part of an overall goal to improve access to care and be more patient- and family-centered. What we really want is happier and healthier children," said John Fazio, clinical nurse specialist for emergency services at SFGH.

At SFGH, which serves as the city's sole trauma center, about 3,000 youngsters under the age of 18 are treated each year in the emergency department. Of these children, about half receive treatment for traumatic injury, most often related to a motor vehicle crash, a fall, or being struck by an object or person.

The new room will serve children with major trauma, as well as other, less serious ailments, such as cuts, burns, broken bones, and dislocated joints. It also will be the place for care of life-threatening illnesses, such as shock, seizures and shortness of breath, Dieckmann said.

The availability of the new room will give doctors and nurses flexibility in how they care for patients. "The room represents an innovative approach to care because it recognizes the fact that a two-year-old with a laceration has needs that are different from those of a 17-year-old with the same injury," Fazio said.

The idea for the treatment room was first proposed by Peggy Knudson, chief of pediatric trauma at SFGH who also is UCSF associate professor of surgery and director of the San Francisco Injury Center. Several years ago she recognized the need for a designated space for young patients. The room will increase the trauma center's overall area by 33 percent, she noted.

According to Dieckmann, about 90 percent of children's medical emergencies nationwide are handled in general emergency departments, which tend to be poorly equipped for the special needs of young patients. The result is that children are often subjected to long waits, receive care without use of appropriate equipment or pain medication, and suffer the psychological distress of being treated alongside adults with serious medical problems, he said.

Now youngsters who come in to the SFGH emergency department will be taken directly to the pediatric room through a separate hallway, bypassing the waiting room and treatment areas where adults receive care. The room will be equipped with a television set, video-cassette recorder, and compact disc player with headphones to help distract a child from the unsettling experience of receiving emergency treatment. The room also is designed so family members can be present during treatment to provide valuable emotional support.

"We strongly encourage parents to be with the kids," Dieckmann said. "We have to view the 'injured child' as the 'injured family.' Family members are part of the biological system and are key to pain and stress management."

The room will be equipped with a pediatric 'crash cart' developed by Fazio that uses a color coding system to determine quickly the equipment size and drug dosage level that is appropriate for each youngster. SFGH pioneered the pediatric cart, which is now widely used in hospitals nationwide.

"It's a fail-safe system that means no child gets an oxygen mask or an IV needle that is a wrong size or a medication that is not the appropriate dosage," he said.

Children who receive emergency treatment also will have access to appropriate pain medications under SFGH's model pediatric pain policy. "It is well known that kids are far less likely to receive appropriate analgesia than adults," said Dieckmann, who helped develop the policy.

"That has a lot to do with the fact that most kids in general emergency departments are being cared for in an adult environment," where caregivers are reluctant to apply the same medications to children he said.



Kathryn McDonald

Viewing the presentation were, from left, John Fazio, SFGH clinical nurse specialist; William Schecter, UCSF professor and chief of surgery at SFGH and a board member of the SFGH foundation; Peggy Knudson, UCSF associate professor and chief of pediatric trauma at SFGH; and Paula Carien Schultz, vice president of the SFGH Foundation.